

What Clicks? Why Click?

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Challenges?


- Why do I need to take this class?
- Why can't I use a calculator?
- Why do I need to learn all these?

• **Why²⁰⁰⁹?**

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What Clicks?

- Concepts & *students*
- Instructors & *students*
- Success & *students*

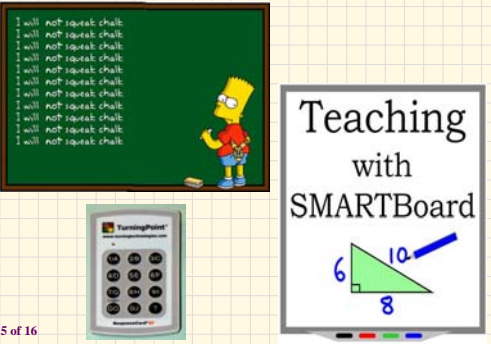


Who Clicks?

Students

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Teaching Techniques



Teaching with SMARTBoard

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What are the big problems in Basic Math Skills class?

- PEDMSA or PEMDAS
- Fraction operations (+, -, ×, ÷)
- Decimal division & multiplication
- Ratio, rate, and proportion
- Bermuda triangle → percent, decimal & fraction
- Solving proportion problems by cross-multiplication (IS/OF = PERCENT/100) or the percent equation (amount = % * base)
- 1-D, 2-D, and 3-D geometry
- Signed number operations (+, -, ×, ÷)

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What is the Clicker Teaching Technique (CT²)?

- After each basic math skill is lectured, **Clicker Questions (CQs)**, in the form of multiple-choice, are quizzed, submitted, and discussed.
- *An appropriate amount* of time is applied on each CQ according to the **30%-70% rule**.

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What Clicks? Why Click?

What are the **strengths** of the **CT²**?

- Instant feedback on skills just lectured
- One-to-one tutoring time during CQ session
- Real-time learning right in the classroom!

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What are the **pitfalls** of the **CT²**?

- **Cost** to students (approx. \$25 ~ \$45 each)

Preparation time

for lecture notes **PLUS** appropriate **numbers and types** of Clicker Questions

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How do you know when learning has taken place?

“... the best teachers believe that learning involves both personal and intellectual development ... People can change, and those changes – not just the accumulation of information – represent true learning.”

What the Best College Teachers Do
Ken Bain, Harvard University Press

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What to do if ...?

- Correct-response percentage is **above 70%**



- Spend **less** time when reviewing the problem
- Pinpoint out the possible mistake

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It is  to say

that these changes in philosophy will **require a shift in the way many math teachers teach** as well as in what they expect of their students.

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What to do if ...?

- Correct-response percentage is **below 30%**




- Spend **more** time when reviewing the problem
- **Peer-Instruction**
- **Re-Poll**

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What Clicks? Why Click?

What to do if ...?

- Correct-response percentage is **between 30% and 70%?**



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Finally,

Why Click?

Because it works!

... at least for now **and** active learners!

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Q1. Multiply.

$\frac{5}{7} \times \frac{3}{8}$

1.. $\frac{15}{56}$

2.. $\frac{21}{40}$

3.. $\frac{8}{15}$

4.. $\frac{40}{21}$

10

0% 0% 0% 0%

1 2 3 4

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

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Q2. Determine which equation is a true statement?

1.. $\frac{12}{42} \stackrel{?}{=} \frac{10}{35}$

2.. $\frac{1}{2} \stackrel{?}{=} \frac{3}{4}$

3.. $\frac{10}{9} \stackrel{?}{=} \frac{11}{10}$

4.. $\frac{48}{56} \stackrel{?}{=} \frac{40}{48}$

10

0% 0% 0% 0%

1 2 3 4

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

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